Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Section 2.106 of the	)	ET Docket No. 95-18
Commission's Rules to Allocate	)	
Spectrum at 2 GHz for Use by	)	
The Mobile Satellite Service	)	

OPPOSITION TO PETITION FOR PARTIAL RECONSIDERATION OF THE MSS COALITION

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To: The Commission

OPPOSITION TO PETITION FOR PARTIAL RECONSIDERATION OF THE MSS COALITION

ABC, Inc. ("ABC"), the owner of ten television stations and of the ABC Television Network, hereby opposes the MSS Coalition's Petition for Partial Reconsideration of the Commission's First Report and Order (adopted March 13, 1997) in the above-captioned proceeding.

Introduction, Procedural History and Summary of Argument

The Commission's First Report and Order carefully weighed and balanced the competing needs of both mobile-satellite services ("MSS") and broadcast auxiliary services ("BAS"). It allocated to MSS 35 MHz of spectrum at 1990-2025 MHz currently used for BAS. In return it gave the BAS incumbents 20 MHz at 2110-2130 MHz to add to

their remaining 85 MHz at 2025-2110 (a net loss to broadcasters of 15 MHz, from a total BAS band of 120 MHz to only 105 MHz) and required that MSS providers pay all costs associated with the necessary relocations.

The MSS Coalition now argues that it should have the benefits of the new allocation without the corresponding obligations. It wants to acquire the entire 35 MHz of spectrum from BAS that the Commission has allocated, but argues that BAS should not receive any spectrum in return and that MSS therefore should not have to pay any relocation costs. This one-sided proposal -- which would benefit MSS at the expense of BAS -- would not serve the public interest and should be rejected.[1]

The MSS Coalition claims that in a digital television era BAS will be able to make do with much less spectrum than even the reduced allocation it would receive under the First Report and Order. It suggests that the advent of digital television and its impact on BAS spectrum needs is somehow new information that the Commission did not or could not adequately consider in reaching its original decision. In fact, however, as demonstrated clearly in the joint opposition of the Association for Maximum Service

[1]Southwestern Bell Wireless, Inc. and Southwestern Bell Mobile Systems, Inc., in their own Petition for Reconsideration, argue that the allocation to MSS may be overly generous for reasons we believe the Commission should find persuasive. If the Commission adopts this view, less spectrum would need to be cleared by and for BAS, and the amount of the relocation costs would be reduced. See Joint Comments of the Association for Maximum Service Television and other parties in this proceeding, ET Docket No. 95-18, May 17, 1996, pages 13-14.

Television ("MSTV"), the National Association for Broadcasters ("NAB") and the Radio-Television News Directors Association ("RTNDA"), the MSS Coalition's petition for reconsideration presents no new facts to support a lesser allocation to BAS than provided in the First Report and Order. The MSS Coalition's arguments have all been presented to the Commission, weighed, considered and rejected before. Therefore, under section 1.429(b) of the Commission's rules, the petition for reconsideration must be denied.

The MSS Coalition's contention that the record on digital TV is insufficiently complete to conclude that BAS needs the entire 2025-2130 MHz band of spectrum is demonstrably untrue. The transition of broadcasters to digital TV has been in the planning phase for over ten years. During this period, broadcasters have been learning what is possible and, conversely, what is not possible in digital remote program origination. This information has been presented to the Commission in earlier dockets and in the digital television ("DTV") docket as well as in this proceeding.[2] Technology has advanced over the intervening time, and some problems have been at least partly resolved, but other problems remain, and new ones have surfaced: for example, problems with concatenation of compression algorithms that previously were only

[2] See, e.g., ABC's Comments in ET Docket 92-9, dated June 5, 1992, Engineering Statement pages 4-7.

predicted. In sum, it has become clear that the launch of digital television requires more rather than less bandwidth capability than ever before because it requires broadcasters to deliver significantly more picture detail.[3]

Rather than bringing new facts to light, the MSS Coalition's Petition for Reconsideration ignores inconvenient facts by restricting the discussion. The MSS Coalition's assessments of the capacity for BAS to use spectrum more efficiently are wildly optimistic and based on best-case scenarios rather than real-world situations.

In fact, the BAS spectrum is already accommodating more users than ever before. See Section I, infra. Moreover, as demonstrated repeatedly in prior filings in this proceeding by ABC, MSTV, the NAB, the Society for Broadcast Engineers ("SBE") and others, digital technology is not necessarily more spectrum efficient than analog, and digital television requires significantly better contribution quality and therefore more bandwidth than the MSS Coalition admits. See Section II. In addition, as demonstrated in prior pleadings, the MSS Coalition has further underestimated BAS requirements by ignoring mobile and portable uses and the effect of latency on live events. See Section III. The requirements that would be placed on television by the MSS Coalition's proposals

[3] In arguing otherwise, the MSS Coalition erroneously equates the creation of an entirely new DTV system -- which is designed to offer viewers enhanced picture quality -- with a mere digital translation of the existing analog signal.

would necessarily result in loss of true mobile camera capability and in "advanced digital" pictures significantly grainier than today's analog pictures in areas of significant motion. In sum, MSS' proposal would result in damaging or destroying live television coverage of fast-moving news and sports events, which is currently relied upon by virtually every American citizen.

While all this information was part of the record before the Commission when it issued its Report and Order, we reiterate below some of the pertinent facts relating to the demand for BAS spectrum that the MSS Coalition conveniently ignores.

I. The Broadcast Auxiliary Spectrum Is Already Accommodating Far More Users than Ever Before.

As the record in this and other proceedings makes clear,[4] many additional spectrum users have been added to the broadcast auxiliary spectrum in approximately the last ten years with no additional spectrum allocations being made. The 2 GHz BAS spectrum was formerly used only by television stations and by broadcast networks operating through their owned stations. No new spectrum was allocated to accommodate cable systems and cable networks (3d R&O in Gen. Docket No. 82-334, released Feb. 23, 1987), such as

[4] ABC Comments, ET Docket 92-9, June 5, 1992, Engineering Statement pages 3-4; Joint Request for Clarification of MSTV and other parties, ET Docket 90-314, July 25, 1994, at note 8; Joint Comments of MSTV and other parties, IC Docket 94-31, March 6, 1995, at notes 4, 6 and 7; Joint Comments of MSTV and other parties, ET Docket 95-18, May 5, 1995, at II.A; Joint Comments of MSTV and other parties, ET Docket 95-18, May 17, 1996, at pages 8-9.

NY1, News 12 Long Island, CNN, and ESPN. No new spectrum was allocated to accommodate new television networks Fox, UPN, or WB. In short, there are now more simultaneous users in many markets than there are channels, and real-time frequency coordination has become even more complicated and challenging. Meanwhile, the intervening time has also seen mobile usage increase greatly as camera systems have become miniaturized in size and weight, permitting more desirable camera viewpoints to be used for an increasingly sophisticated audience.

The congestion of the 2 GHz BAS spectrum is exacerbated when a news or sporting event of national importance occurs, such as the Oklahoma City bombing and trial, and out-of-town users descend upon the local market. Broadcasters have, so far, been able to continue to operate with no additional channels, often by doubling up and reusing channels in inventive ways wherever possible. But there is a point of diminishing returns. As broadcasters' sharing options decrease, their need for more channels becomes greater. Instead, even under the First Report and Order, broadcasters are being faced with narrower channels, which restrict re-use options.

II. Digital Television Requires Significant Spectrum.

The MSS Coalition has stressed the replacement of analog by digital as an excuse for calling for narrower channels. However, as the prior record in this proceeding and the DTV proceeding, MM

Docket No. 87-268, already makes clear, many of the assumptions made by the MSS Coalition are simply incorrect.

A. Digital does not necessarily use less spectrum than analog.

Contrary to the MSS Coalition's claims, digital television does not necessarily use less spectrum than analog. Digitization increases bandwidth, and compression "throws away" data selectively to mitigate the increase. This is thoroughly explained in paragraph 9 of SBE's opposition to the Petition for Reconsideration, as well as in prior pleadings,[5] and we will not reiterate here that explanation.

ABC is intimately familiar with the kinds of programs broadcasters produce and air and the differing constraints applicable to each of these programs. The ABC Engineering Lab has selected test signals to determine how well digital compression systems work under typical high-motion conditions, such as are often found in ABC news, sports and entertainment programming. ABC has not yet found a compression system capable of compressing actively moving National Television Systems Committee ("NTSC") digitized video images below the 18.6 Mb/s referred to in ABC's May 1996 laboratory report (22 Mb/s with audio and error correction)

[5] See ABC Comments, ET Docket 92-9, June 5, 1992, Engineering Statement at pages 4-6; Joint Request for Clarification filed by MSTV and other parties, ET Docket No. 90-314, July 25, 1994, at note 14; Joint Reply Comments of MSTV and other parties, ET Docket 95-18, June 21, 1995, at pages 5-7; Joint Comments of MSTV and other parties, ET Docket 95-18, May 17, 1996, at pages 11-12.

without reducing quality from contribution to distribution grade. See ABC Engineering Statement attached to Joint Comments of MSTV and other parties, filed May 17, 1996 in this proceeding.

The MSS Coalition's Petition repeats COMSAT's earlier error of using bit rates and occupied bandwidths only fit for low-motion pictures, an apparent oversight by MSS parties that ABC already pointed out in the lab results that it shared with COMSAT in September 1995 and filed in this proceeding in May 1996. The only circumstances under which existing compression equipment has worked well to date are those in which it has not been stressed. High-motion pictures stress the compression equipment beyond its capacity to deliver acceptable results.

The MSS Coalition touts the COMSAT-Wegener DV2000 as a solution to the problem of limited bandwidth and digital compression, claiming that this device will enable broadcasters to compress the digital signal adequately to enable them to make do with much less spectrum than they have been allocated in this proceeding (page 14 fn. 40 and Exhibit A, page 7). However, as documented in ABC's May 1996 engineering statement, the prototype of the DV2000 was tested in the ABC Engineering Lab in July 1995 and found to be inadequate. Even two years ago it was obvious that this device's utility was highly limited, and that it would only meet some of broadcasters' needs -- those requiring the least picture detail. The DV2000 may be useful for ENG stand-ups, but it

is wholly inadequate to deal with rapid motion in pictures. For the MSS Coalition to now claim that its compression device is a new and miraculous solution to the need for replacement BAS spectrum is simply disingenuous.

The MSS Coalition also overlooks the necessary distinction between contribution and distribution signal qualities, which is discussed in paragraphs 11-17 of SBE's opposition to the MSS Coalition's petition, and was discussed repeatedly before.[6] Briefly, pictures undergo significant processing after leaving the camera en route to the viewer, which the MSS Coalition has ignored. Excessive compression too early in the process irrevocably damages the picture. SBE's analysis also demonstrates why the MSS Coalition's extrapolation from today's use of a single-pass compressed digital link in analog television to a future all-digital television system is hopelessly optimistic.

B. Future Digital Television With Improved Picture Detail Will Require Much More Data, Which Requires More Spectrum.

The lengthy discussion in Exhibit A to the MSS Coalition's petition (pages 5-7) about digital compression, titled "Increased Spectrum Efficiency," is based upon a mis-definition of contribution quality that assumes single-pass (unconcatenated) compression, or the lack of camera cuts, video effects, captions

[6] Comments of SBE, ET Docket 95-18, May 5, 1995, at paragraph 9.1; Joint Comments of MSTV and other parties, ET Docket 95-18, May 17, 1996, pages 9-10.

(closed or open) or other edit inserts and program breaks, rather than the multiple-pass transmission compression/decompression cycles that would be necessary to produce and distribute ABC's news, sports and entertainment programs in a digital world. In addition, it is based entirely on the limited quality of the present NTSC system (MSS Coalition's Petition for Reconsideration at page 6, bottom). That exhibit describes a picture as, in essence, 480 interlaced lines with 30 frames/60 fields per second, or 480I/30. This is the very same NTSC system that has been essentially defined from the beginning of the DTV process as inadequate for future television. Higher definition formats such as 480P/60 (standard definition), and true high definition formats such as 720P, 1080I, and 1080P, will all require vastly more data.[7] Fitting any such DTV format in contribution quality into the existing BAS spectrum will be a severe challenge; accomplishing this on even less than the already reduced spectrum may be impossible. Indeed, there are now some indications that it may be necessary to transmit many RF camera outputs in analog even in a fully digital world, because of either excessive latency (time delay) or inadequate bandwidth to handle a picture compressed gently enough to remain true contribution quality.

[7] See Joint Comments of MSTV and other parties, ET Docket 94-32, December 19, 1994, at note 8; Joint Comments of MSTV and other parties, ET Docket 95-18, May 5, 1995, at pages 16-17; Joint Reply Comments of MSTV and other parties, ET Docket 95-18, June 21, 1995, at pages 7-8.

The MSS Coalition's proposal would at best lock broadcasters into today's video quality for significant amounts of news and sports actuality programming. If its proposal were adopted, everything that requires 2 GHz spectrum for production, from "talking head" news interviews and stand-ups, which do not require great quality and on which all the MSS Coalition's analyses are based, to sports broadcasts (races, gymnastics) and local and national news events (on-site video of earthquakes, hurricanes, wars, riots) that have very fast motion and need detailed display, will be put through a single narrow pipeline that will noticeably reduce picture quality. Because such degraded pictures will appear back to back with high-quality pictures from wired cameras and movies, the graininess of these remote news and RF camera sports feeds will be obvious.

III. The MSS Coalition Has Underestimated BAS Requirements In Other Ways That Lead to Further Excessively Optimistic Evaluations of Digital Compression.

A. The MSS Coalition Has Ignored Mobile and Portable Uses.

The MSS Coalition has attempted to base its entire analysis on the extremely restrictive temporary fixed van model (see especially Exhibit A, pages 3-4). It has thereby completely ignored the moving RF cameras used regularly in productions by ABC and numerous others. ABC frequently uses four or more such cameras in one production. Entire marathon footraces are covered using little or

nothing except moving RF cameras -- because the entire event is moving. The MSS Coalition deliberately ignored these systems to make their point. Such systems and their uses have been described by the broadcast industry numerous times.[8] These uses continue, for example to provide the viewpoint of jockeys in ABC's recent coverage of the Preakness Stakes and Belmont Stakes.

Unlike a temporary fixed van camera, a moving camera does not have a powerful transmitter or a mast antenna. It operates from batteries and with extremely restricted size and weight. Digital compression equipment that would be acceptable for use with fixed van transmitters cannot be used with moving cameras. The available off-the-shelf digital compression equipment totally swamps the size, weight, and power requirements of portable systems. The ABC-tested DV2000 prototype weighed 30 pounds; a typical highly-mobile camera/transmitter/antenna system, complete with battery, weighs closer to four pounds. It is simply unrealistic to expect portable camera operators or event participants such as athletes wearing cameras for television purposes to walk around or compete with 30 pounds of additional equipment on their backs.

Right now there is no compression equipment even foreseeable that will meet the size, weight, power, and cost limitations of true portable use. It may be suggested that, since compressors

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[8] See ABC Comments, ET Docket 92-9, June 5, 1992, Engineering Statement at pages 2-3; ABC Reply Comments, ET Docket 92-9, July 8, 1992, Engineering Statement at pages 3-4; SBE Comments, ET Docket 95-18, May 5, 1995, at paragraph 9.7; SBE Reply Comments, ET 95-18, June 22, 1995, at paragraph 8.

have been reduced from several hundred pounds to thirty pounds, a further weight reduction to a couple of pounds is possible, but that suggestion ignores the difficulty, necessary time frame, and cost. Until hardware is available, predictions are speculative. Simply put, the MSS Coalition proposal, if adopted, would put an end to broadcasters' ability to transmit moving camera pictures of news and sports events to the public for the foreseeable future.

B. The MSS Coalition Ignores the Effect of Latency on Live Events.

ABC concurs with SBE's opposition to the MSS Coalition's Petition at paragraph 9, both as to the likely effects of inappropriate digital compression forced by reduced BAS spectrum on multi-camera field productions and as to its effects on live interview programs. As explained in ABC's laboratory report attached to the Joint Comments of MSTV and others filed in this proceeding on May 17, 1996 (page 5), interviewees at remote locations (such as a state governor live from the statehouse) would seem slow or perhaps even slow-witted because they would always be behind the studio parties in responding. Broadcasters now attempt to mitigate significantly less amounts of delay than this.

Conclusion

The MSS Coalition's Petition for Partial Reconsideration raises no new facts and is based on erroneous assumptions and false expectations about DTV. The petition should therefore be denied.

Respectfully submitted

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CERTIFICATE OF SERVICE

I, Anne Kromm, hereby certify that on this 18th day of June, 1997, I caused a copy of the foregoing "Opposition to the Petition for Partial Reconsideration of the MSS Coalition" to be served by first-class United States mail, postage prepaid to:

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